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Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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PAUL C STOCKHAUSEN

ENTOMOLOGICAL NEWS

VOL. XLVI. OCTOBER, 1935 No. 8

Paul C. Stockhausen

(Portrait, Plate II.)

PAUL C. STOCKHAUSEN printed ENTOMOLOGICAL NEWS, Volumes I-IX (1890-1898), XI, No. 2-XXX (Feb. 1900-1919), XXXII-XLVI, No. 7 (1921-1935), or the greater part of forty-six years, and Volumes XIII-XXXIX (1886-1912), LIV-LV (1928-29), or twenty-nine years, of the Transactions of the American Entomological Society, including the supplementary volume, the Synopsis of the Families and Genera of the Hymenoptera of America north of Mexico, by E. T. Cresson. In 1912 it was considered desirable to alter the composition of the Transactions to monotype, hence the change to another printer in the following year.

The fact that the NEWS has been able to continue during recent years has been largely due to Mr. Stockhausen's ability to produce it at a low cost. Now that he has passed away, on July 5, 1935, the Editors of this journal desire to place on record this fact and also their appreciation of what he made possible and their sorrow that he is no longer here to help us. His genial personality, his willingness to take time and pains to carry out the Editors' desires are things on which to look back with pleasure and satisfaction, as well as with the keen regret that severance of old ties brings to all.

Mr. Stockhausen was born in Schoharie, New York, November 24, 1857, and therefore was well on in his seventy-eighth year. He attended the Schoharie Academy and learned the printing business in Albany. In 1873 he moved to Philadelphia and found employment in the printing and publishing house of J. B. Lippincott & Company, then located at 715-717 Market Street. The American Entomological Society had been printing its Transactions first at its own hall at 518 South 13th Street (1867-1876), then at the Academy of Natural Sciences, 1900 Race Street, by the labors of its own members, particu-

larly E. T. Cresson and Charles A. Blake. In January, 1884, its presses and type were loaned to George B. Cresson, who installed them at 55 North 7th Street. Paul C. Stockhausen took over the equipment and work in 1886 and subsequently added a floor in the adjoining property, No. 53. Thus in these premises entomological printing has been carried on for fifty-one years, and in them the Estate of Paul C. Stockhausen continues the production of ENTOMOLOGICAL NEWS.

On December 9, 1891, Mr. Stockhausen married Regina C. Smith. They had one daughter, Regina Emma, a student of plant pathology, who, on December 26, 1923, became the wife of Albert Joyce Riker, at present Professor of Plant Pathology in the University of Wisconsin at Madison.

Mr. Stockhausen was a member of Joppa Council No. 46 Royal and Select Masons, St. John's Commandery, Elkins Lodge No. 646, Free and Accepted Masons, Keystone R. A. Chapter No. 175, and Sioux Tribe No. 87, Improved Order of Red Men.

We are indebted for much of the personal information to Mrs. Paul C. Stockhausen, to whom and to her family we tender our sincere sympathy.

PHILIP P. CALVERT,
EZRA T. CRESSON, JR.

Notes on the Group Gomphoceri and a Key to its Genera, including one New Genus (Orthoptera, Acrididae, Acridinae).

By MORGAN HEBARD, Philadelphia, Penna.

(Continued from page 188.)

AEROPEDELLUS CLAVATUS CLAVATUS (Thomas).

1873. *G[omphocerus] clavatus* Thomas, in Hayden, Rept. U. S. Geol. Surv. Terr., V, p. 96. [♂, Kansas [10].]

Compared with *A. variegatus variegatus* (Fischer) [11] (described in 1846 from Verkni-Udinsky, Transbaicalia and from the Caucasus Mountains) the present insect is seen to be very closely related, possibly no more than a geographic race, though

[10] In error, probably actually from the mountains of Colorado. See Hebard, Proc. Acad. Nat. Sci. Philadelphia, LXXXIII, p. 143, (1931).

[11] A series of six males and four females from the Altai Mountains, Transbaikalia and the vicinity of Yakutsk, is in the author's collection.

that we consider improbable. In general form our series of *clavatus* averages more graceful (but this is negligible in material from localities of more boreal character where individuals often average more robust with shorter antennae and limbs), the male antennae are more definitely and abruptly clubbed at their apices (very feebly broadened over a distinctly greater distance in our males of *variegatus*), the males have the pronotal disk averaging more elongate with constriction usually very evenly concave and rarely weakly angulate (weakly to strongly angulate in our males of *variegatus* and also shorter except in the two from the Altai Mountains), the vertex averages more produced in both sexes and the female tegmina are normally much more reduced, shorter instead of distinctly longer than the combined length of head and pronotum (reaching to just beyond a median point on the abdomen in our females of *variegatus*).

In *clavatus* males usually have the tegmina reaching to above the supra-anal plate, but a few before us are fully caudate. The degree of brachypterism in females is very constant and among two hundred and eighty of that sex before us only one, from the Big Horn Mountains of Wyoming, shows more than very slight divergence from the normal. That female, however, has the tegmina reaching almost to the apices of the caudal femora.

In females of these species the pronotum is shorter, the prozonal disk less elongate and the constriction of the lateral carinae is often more decided and more angulate.

Inflation of the male cephalic tibiae occurs locally in both. In nine of ten males from Alaska [12] it is very faintly suggested and it is obsolete in males from most of the other series before us, including a considerable number from above timber line on Pike's Peak, Colorado, in which it would certainly have appeared if it were a constant response to an unusually rigorous environment. A male from the Thomas Collection taken in the Alpine Zone of Colorado and twenty males (all of the series)

[12] The following interesting material from Alaska has just been received for study through the kindness of the authorities of the National Museum. Near Seward, Kenai Peninsula, VII, 1900, (W. J. Peters), 1 ♂. McKinley Park, (F. Morand), 7 ♂, 4 ♀. Cape Denbigh, Norton Sound, IX, 16, 1929, (H. B. Collins), 2 ♂, 1 ♀.

These specimens are of medium size and average slightly more robust than material from more temperate environment. The males have the cephalic tibiae feebly inflated, this scarcely appreciable only in the individual from near Seward.

from Bullion Peak, Park County, Colorado, at 12000 to 14000 feet, belonging to the author, are remarkably uniform in having the cephalic femora conspicuously inflated, ranging in width from slightly less to slightly more than the width of the stout cephalic femur. The reason for this very remarkable development in the species of this genus and *Aeropus* is unknown, but we do not feel that nominal recognition is warranted. Such material furnished the basis for the synonym *Gomphocerus carpenterii* (Thomas), 1874, from near the Mountain of the Holy Cross, Colorado, while the synonym *Gomphocerus clepsydra* Scudder, 1875, was based on a condition approaching the optimum developed on the Great Plains.[13]

The distribution of *clavatus* is now known to extend northeast to Hamline, Detroit and Crookston, Minnesota: north to Aweme, Manitoba; Prince Albert and northwestern Saskatchewan;[14] the Peace River Block, British Columbia, and McKinley Park and Cape Denbigh, Alaska: west to Cape Denbigh and near Seward, Alaska; the Peace River Block and the East Kootenay Valley, British Columbia; Lake View and Missoula, Montana; Salmon City[15] and the road pass summit between the Big Lost River and the Salmon River at 7190 to 7300 feet in Custer County,[15] Idaho; Levan[15] and Bryce Canyon on the Paunsagunt Plateau,[15] Utah; Bright Angel Point on the Kaibab Plateau[15] and the San Francisco Peaks,[15] Arizona: south to the latter; Cloudcroft in the Sacramento Mountains at 8700 feet, New Mexico; Glen and West Point, Nebraska, and Jefferson, Iowa,[15] while the Minnesota and Iowa records are eastern limits as well.

As we stated in 1931, this species probably does not occur in Kansas and, except in extreme northwestern Nebraska, it is probably very local and scarce in that State as well as in northwestern Iowa. In those regions, however, the optimum individual development is attained.

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[13] See Caudell, Proc. U. S. Nat. Mus., XXVI, p. 783, (1903); Rehn and Hebard, Proc. Acad. Nat. Sci. Philadelphia, 1906, p. 370, (1906), and Hebard, ibid., LXXX, p. 229, (1928).

[14] A very small but slender female in the author's collection.

[15] Material in the author's collection.

Aeropedellus variegatus arcticus new subspecies.

1915. *Gomphocerus clavatus* Caudell (not of Thomas, 1873), Canadian Ent., XLVII, p. 160. [The material here discussed.[16]]

This race is based on material taken in northeastern Alaska one hundred and eighty-five miles north of the Arctic Circle. It shows nearest agreement with some of the specimens before us of *variegatus variegatus* (Fischer) from near Yakutsk, Siberia, being similar in having the apices of the male antennae very weakly thickened for some distance, the short pronotal disk with constriction of the lateral carinae decided (but averaging more concave and not as angulate), and the male tegmina subcaudate, but it differs in its definitely more robust form and less reduced organs of flight in females, which latter almost reach the base of the supra-anal plate.

Compared with *clavatus* (Thomas) that insect is found to differ in the distinctly (in boreal regions) to decidedly (in more temperate areas) more slender form, shorter and (usually) decidedly more heavily clubbed apices of the male antennae, moderately retreating face, much more elongate and less constricted (except in rare females) pronotal disk and (except in extremely rare aberrant cases) the very much more reduced organs of flight in females.

Type: ♀ ; latitude 69° 20′ North, longitude 141° West, Malcolm River, International Boundary, ALASKA. August 8, 1912. (J. M. Jessup.) [U. S. National Museum.]

Size medium, form robust. Antennae slightly enlarged and flattened for some distance at apex. Face weakly retreating. Lateral foveolae deep and elongate. Vertex broad and short, broader than long, its lateral margins meeting to form a rectangle. Pronotum comparatively short, the strong median carina cut by the principal sulcus just caudad of a median point; latreal carinae weaker, rather strongly concave constricted, this greatest just caudad of a median point on prozona, diverging caudad with faint convexity indicated. Organs of flight somewhat reduced, reaching to base of supra-anal plate. Ovipositor valves short with apices quite strongly curved.

[16] This record has been repeated by E. M. Walker in 1920, Ramme in 1928 and Miram in 1931.

Allotype: ♂ ; same data as type. [U. S. National Museum.]

Very similar to female in form and proportions of vertex and pronotum. Antennae with apices similarly and only very slightly more strongly clubbed. Organs of flight subcaudate, reaching nearly to base of genicular portions of caudal femora. Supra-anal plate with lateral margins rounding suddenly into the transverse caudal margin from which projects mesad a prominent slender straight spike.

Specimens somewhat discolored. Light brown with apices of antennae dark. Male otherwise immaculate except that the supra-anal plate is margined with black. Female maculate with dark brown much as in typical *variegatus* and *clavatus*, the tegmina with some dark rounded spots in one, a very few of these in the other.

A single paratypic female bearing the same data is in the author's collection, its measurements being given last. Length of body ♂ 15.7, ♀ 18.3 and 17.8; (estimated) length of antenna ♂ 7.4, ♀ 7.2 and 7.2; length of pronotum ♂ 3.3, ♀ 3.6 and 3.8; caudal width of pronotal disk ♂ 2.7, ♀ 3. and 3.; length of tegmen ♂ 10.8, ♀ 9.6 and 8.8; length of caudal femur ♂ 10., ♀ 10.8 and 10.8 mm.

Tegminal reduction is often found the most pronounced in material from the most rigorous portions of the range of a species of grasshopper. The reverse is true in the present case.

A New Species of Ant from Tennessee (Hymen.: Formicidae).

By Laurence Goddard Wesson, Haverford College, Haverford, Penna.

In my material from Nashville, Tennessee, Dr. W. M. Wheeler, of Harvard University, pointed out a form which proves to be a new species of *Dichothorax* and is of special interest as it belongs to a small and little known group. I take pleasure in naming it after Dr. W. M. Mann from whom I have received many kind favors.

Leptothorax (Dichothorax) manni sp. nov.

Worker: length 2.75-3.5 mm. Mandibles rather long, triangular, the terminal tooth prominent. Clypeus moderately

convex, broadly rounded in front, with the median carina very distinct on the anterior portion. Eyes distinctly oval. Head nearly square, the posterior margin flattened. Antennae twelve-jointed, the scape extending beyond the posterior angle of the head a distance equal to three times its breadth. First funicular joint as long as the three succeeding joints together; joints three to eight subequal; club three-jointed, prominent, the two basal joints subequal, together shorter than the terminal joint.

Thorax long and robust, somewhat wider in front than behind, without abrupt declivity at juncture of neck and pronotum. Pro- and mesonotum convex; mesoepinotal constriction abrupt, very deep and broad; epinotum as seen from the side not lying in the plane drawn from the top of the mesonotum to the base of the spines, but lying below it. Epinotal spines small, shorter than broad at base, directed divergently upward.

Petiole from above three times as long as the greatest width. The node from the side is low and rounded above, the anterior slope long, the posterior slope shorter and flattened; as seen from behind the node is rather wide and distinctly concave. Ventral surface of the peduncle with a long, rather prominent tooth. Postpetiole half again as broad as petiole, a little broader than long, its anterior angles prominent, its dorsal surface convex. Gaster rather large, the usual shape. Sting large. Legs robust.

Mandibles longitudinally striated. Clypeus smooth, more so behind, the sides longitudinally rugose; clypeal sutures deep. Head smooth and shining, irregularly and delicately reticulate. Neck opaque and delicately rugose; pro- and mesonotum shining, finely and widely reticulate; pleurae, epinotum and mesoepinotal constriction subopaque, coarsely reticulate rugose. Declivous surface of epinotum smooth and shining. Petiole and postpetiole shining, finely reticulate above, reticulate-rugose on the sides. Gaster shining, widely and faintly reticulate.

Hairs long, white and abundant, erect on the trunk, shorter and suberect on the legs and antennae.

Shining jet black; mandibles, antennae except the club which is dark, peduncle, tarsi and joints yellowish. In most specimens the antennae are considerably infuscated while in some the usually yellow portions may be almost entirely black.

♀ : length 4.25-5.25 mm. Apart from the usual sexual characters, differs from the worker in having the yellow portions darker, the head slightly broader. The sculpture is more uniform. Wings milky-hyaline; veins and stigma colorless. Concavity at summit of the petiolar node very distinct.

♂ : length 2.5-2.75 mm. Head a little longer than broad; eyes and ocelli large and prominent. Mandibles four-toothed. Clypeus convex. Antennae thirteen-jointed; scape about as long as the five succeeding joints, club four-jointed, as long as the seven preceding joints. Mesonotum rounded, projecting forward, concealing the head from above. Epinotum with two small tubercles in place of spines. Petiole slender, shorter and straighter than in the worker and with a lower node which is quite concave as seen from behind; the node is the highest point in the middle of the petiole. Post-petiole square from above. Gaster and legs of the usual shape.

Clypeus smooth, shining, with a few irregular wrinkles. Antennal foveae with parallel rugae. Head closely and rather coarsely reticulate; a smooth spot with a few shallow foveolae in front of ocelli. Pronotum opaque, closely reticulate; mesonotum smooth, shining, finely reticulate; scutellum opaque, reticulate-rugose, the rugae with a longitudinal trend. Epinotum and plurae coarsely reticulate. Petiole and postpetiole opaque, rugose.

Hairs long, white, sparse, slightly reclinate on the legs, shorter and more reclinate on the antennae.

Black. Mandibles, antennae and legs pale except the teeth and tip of the mandibles, tip of the terminal joint of the club, basal two-thirds of the coxae, middle of the femora and tibiae, and the last joint of the tarsi, which are infuscated. Wings milky-hyaline, quite hairy, with colorless veins and stigma.

Type locality: Nashville, TENNESSEE. Described from numerous workers, females and males taken from several colonies. The type specimens are deposited in the U. S. National Museum, Washington.

Close to *D. pergandei*, but differs from it, in the worker, in the longer antennal scapes, triangular mandibles with longer terminal tooth, proportionately longer eyes, more distinct median carina, deeper clypeal sutures, more prominent antennal club, deeper mesoepinotal constriction, more nearly square head, more truncate posterior margin, larger size, and in having the color invariably jet black with the exceptions noted above.

The colonies are found in clayey, sunbaked, sparsely vegetated soil. They are not common, but may usually be found wherever the conditions are right. The nests are shallow, seldom more than four inches in depth, and contain from 75 to 250 workers which may be seen running swiftly about during the hottest part of the day.

Catocala coelebs in New Hampshire (Lepid.: Noctuidae).

By MARGARET M. CARY (Mrs. C. Reed Cary), Westhill, New London, New Hampshire.

In 1934 two *Catocala coelebs* found their way into the light-trap which hangs from the roof of our low white cottage near New London, New Hampshire. Since we had caught on sugar a rubbed specimen, we decided to hunt for a probable breeding place. Not far away we found a swamp with a sphagnum base in which grow wild cranberries, spiraea and quantities of *Myrica gale*. In as much as the closely related *C. antinympha, C. badia* and *C. muliercula* feed on shrubs of this Myrica family, we thought this a likely place to start sugaring. For three weeks we baited the trees and telegraph poles near this swamp, and succeeded in taking eight males and one much rubbed female. Those which came to light were flying on August 12 and 13, and we caught them at bait from Aug. 20-Sept. 10. They came to bait between 8.45 and 9.45 Daylight Saving Time, and preferred warm, muggy, foggy, or slightly rainy nights. This June, 1935, about the 17th, when we came up to open our cottage, we took a sheet to the swamp, wrapping it round the bases of the *Myrica gale* bushes and beat the bushes. We finally succeeded in getting one *Catocala* larva about an inch long, which I took back to Germantown with a great deal of *Myrica gale*. The larva was black, sparsely covered with hairs, had a pointed head with a few vertical whitish stripes, and was slightly larger on the abdominal segments. The venter was white with a faint red stripe in the center. It moulted June 23 and came out a dark reddish brown ground color, its head brown with longitudinal white stripes, but without the stripe running round the head as shown in the illustrations of larva of *muliercula, antinympha* and *badia* in Barnes and McDunnough. The spiracles were brown, edged with black. There were six white-topped tubercles on the front edge of each segment and four on the hind edge. There were brownish black spots all over the ground color and a black hair out of each tubercle. The tubercles on claspers and two

anal segments were slightly more swollen than the other tubercles. The prolegs and legs were clear red-brown. The venter was white with an interrupted brown line enlarging into three mesial brown spots, and there was a line of small brown spots on either side of the white venter. After feeding for three days the ground color of larva changed to gray brown. On June 29 when the larva measured nearly two inches, it drew together some leaves to make a thin cocoon, turning into a frosted gray-brown chrysalis three days later. This lively chrysalis hatched into a beautiful male *coelebs* on July 24. Sugaring in the meadow is again in full swing and an attempt will be made to get eggs from any female caught at bait.

Further Records of Beetles Associated with Ants (Coleop., Hymen.).

By ORLANDO PARK, Northwestern University.

The following data are of two kinds. The majority represent the more interesting of those records taken personally in the last few years, but upon which insufficient ecological observations did not warrant extensive treatment; no name follows these records by myself. I have also recorded additional captures made by others, who have been kind enough to share this interesting material with me.

All of the host ants have been identified by Dr. M. R. Smith, and this opportunity is taken to thank him again for his expert aid. The beetles listed belong to seven families, abbreviated as follows: Carabidae (C), Scydmaenidae (Sc), Staphylinidae (St), Pselaphidae (Ps), Ptiliidae (Pt), Histeridae (H) and Anthicidae (A). For convenience in handling, the guests found with an ant are listed under the latter, with full data. In this respect it is of interest to note the apparent importance of two ants (*Aphaenogaster tennesseensis* and *Lasius aphidicola*) in the role of hosts.

1. LASIUS UMBRATUS MIXTUS APHIDICOLA Walsh.

Euconnus (*Scopophus*) *cavipennis* Casey (Sc). Peoria, Illinois, May 28, 1933.

Batrisodes monstrosus (Lec.) (Ps). Peoria, Illinois, May 27, 1933.

B. scabriceps (Lec.) (Ps). White Heath, Illinois, October 8, 1933.

B. schaumi (Aube) (Ps). Palos Park, Illinois, August 1, 1934.

Cedius spinosus (Lec.) (Ps). Palos Park, Illinois, August 1, 1934.

Ceophyllus monilis (Lec.) (Ps). Madison, Wisconsin, May 26, 1929; Dr. J. P. E. Morrison. Peoria, Illinois, October 8, 1933. White Heath, Illinois, October 8, 1933. Palos Park, Illinois, August 1, 1934. Elizabethtown, Kentucky, September 3, 1934, Crothersville, Indiana, September 4, 1934.

Adranes lecontei Brendel (Ps). Elizabethtown, Kentucky, September 3, 1934.

Limulodes paradoxus Matthews (Pt). Peoria, Illinois, May 28, 1933. Elizabethtown, Kentucky, September 3, 1934.

Tomoderus constrictus (Say) (A). Peoria, Illinois, May 27, 1933.

2. LASIUS NIGER AMERICANUS Emery.

Pycnophus rasus (Lec.) (Sc). Spring Valley, Illinois, May 7, 1933; Otto Sejba. Palos Park, Illinois, August 30, 1933. Greenwood, Indiana, August 30, 1934.

Batrisodes globosus (Lec.) (Ps). Peoria, Illinois, September 7, 1931.

Ceophyllus monilis (Lec.) (Ps). Spring Valley, Illinois, May 7, 1933; Otto Sejba.

Adranes coccus (Lec.) (Ps). Springfield, Illinois, April 25, 1926.

3. LASIUS NIGER NEONIGER Emery.

Adranes coccus (Lec.) (Ps). Michigan City, Indiana, May 5, 1934; C. H. Seevers.

4. LASIUS FLAVUS NEARCTICUS Wheeler.

Ceophyllus monilis (Lec.) (Ps). Pittsburgh, Pennsylvania, May 15, 1925; Alfred Emerson.

5. LASIUS (A.) CLAVIGER Roger.

Batrisodes globosus (Lec.) (Ps). Greenwood, Indiana, August 30, 1934.

6. CAMPONOTUS HERCULEANUS LIGNIPERDUS NOVEBORACENSIS Fitch.

Tachyura incurva (Say) (C). Morocco, Indiana, October 25, 1931; J. P. E. Morrison and J. F. Schuett.

Xenodusa cava (Lec.) (St). Morocco, Indiana, October 25, 1931; J. P. E. Morrison and J. F. Schuett. The

host colony was very extensive in a fallen log, and housed a myriad of the beetles. Dr. Morrison informs me that the final count ran well over 200 of the beetles, which makes this the largest record of a single capture of this species as far as I have been able to ascertain. Over 100 of the guests were given to me in alcohol, but as the animals were killed shortly after their capture no ecological study could be made of this adequate material.

7. CAMPONOTUS CARYAE SUBBARBATUS Emery.
Batrisodes globosus (Lec.) (Ps). White Heath, Illinois, October 8, 1933.

8. FORMICA FUSCA Linn. var.
Hetaerius brunneipennis Rand. (H). Mt. Vernon, Wisconsin, May 1, 1930; J. P. E. Morrison.

9. TAPINOMA SESSILE Say.
Myrmedonia (*Nototaphra*) *lauta* Casey (St). Dyer, Indiana, April 27, 1933. M. Talbot. This is a particularly valuable record as it gives a host ant for one of our most interesting staphylinids. Dr. Talbot in her notes informs me that the colony was an extensive one beneath a sheet of cardboard in a roadside ditch, and that the beetles were running about with the host workers, apparently wholly unmolested. Unfortunately the material came to me preserved, so that no ecological observations could be made.

10. APHAENOGASTER TENNESSEENSIS Mayr.
Scydmaenus (*Scydmaenus*) *badius* Casey (Sc). Palos Park, Illinois, August 30, 1933.
Eumicrus motschulskii (Lec.) (Sc). Lecompton, Kansas, October 10, 1933; C. H. Seevers.
Acholerops zimmermanni (Schaum) (Sc). Lakeside, Michigan, June 21, 1933. Smith, Indiana, August 18 and 27, 1934. On the latter date a pair of the scydmaenids were taken in copulation in a large gallery of the host nest. On both dates the beetles were numerous, and quite unmolested by the ants.
Batrisodes schaumi (Aube) (Ps). Palos Park, Illinois, September 1, 1933.
B. riparius (Say) (Ps). Palos Park, Illinois, August 30, 1933.
B. virginiae Casey (Ps). Lakeside, Michigan, June 21, 1933.
Cedius spinosus (Lec.) (Ps). Smith, Indiana, August 18, 1934.

Tmesiphorus carinatus (Say) (Ps). Palos Park, Illinois, August 30, 1933.

Cercocerus batrisoides (Lec.) (Ps). Topeka, Kansas, September 12, 1933; C. H. Seevers. Smith, Indiana, August 18, 1934.

11. APHAENOGASTER FULVA Roger.

Adranes lecontei Brendel (Ps). Michigan City, Indiana, May 15, 1926.

12. APHAENOGASTER FULVA AQUIA Buckley.

Adranes coccus Lec. (Ps). Michigan City, Indiana, May 5, 1934; C. H. Seevers.

Limulodes paradoxus Matthews (Pt). Champaign, Illinois, May 22, 1933. Peoria, Illinois. October 1, 1933.

13. CREMASTOGASTER LEVIUSCULA Mayr.

Fustiger fuchsi Brendel (Ps). Adaton, Mississippi, April, 1931; M. R. Smith.

Identification of Venezuelan Insects Desired.

Two students of entomology in Caracas, Venezuela, have written the Pan American Union expressing their desire to correspond with someone in the United States to whom they might send insects for classification. They suggest that the specimens would remain at the disposal of the correspondent here. They are especially interested in Coleoptera, Hemiptera, Diptera and Hymenoptera. I shall be very glad to hear as to the possibilities.—CONCHA ROMERO JAMES, Chief, Division of Intellectual Cooperation, Pan American Union, Washington, D. C.

Pygocalcager gen. nov. (Dipt.: Tachinidae).

By CHARLES H. T. TOWNSEND, Itaquaquecetuba, Brazil.

Erected for *Calcager humeratum* Hutton, from New Zealand, which is very distinct from *Calcager* Hutton (genotype, *C. apertum* Hutton, desig. TT., 1916).

Runs out with *Uclesiopsis* TT., differing by parafacialia wider than clypeus, no proclinate fronto-orbitals in male, apical cell very narrowly open to closed not far before wing tip, no median marginals on first two abdominal segments, male ninth tergite subconic and anal forceps with basal pair of long narrow lamelliform processes. Differs from *Erythronychia* BB. by 3 ST and the venational and abdominal characters given above.

Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The **figures within brackets** [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of ENTOMOLOGICAL NEWS for 10c. The number of, or annual **volume**, and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

(*) Papers containing new forms or names not so stated in titles, have an * within parentheses thus (*) following the pagination of reference to paper.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Note. Titles of papers containing new forms or new names will be indicated by an asterisk within parentheses at end of reference, (*).

Papers published in the Entomological News are not listed.

New Titles of Periodicals and Serials Referred to.

3. Annales Sci. Naturelles, Zoologie, Paris.
69. Physis. Revista Soc. Argentina Cien. Nat., Buenos Aires.
15. Annales Academia Brasileira de Sciencias. Rio de Janeiro.

GENERAL.—Arrow, G. J.—The undesirability of establishing genera based on characters not common to both sexes and of the naming of subgenera. [Pro. R. Ent. Soc. London] 10: 33-34. **Brause, H.**—Die technik mikroskopisch-entomologischer untersuchungen. [17] 52: 183-188, cont. **Calman, W. T.**—The meaning of biological classification. [31] 136: 9-10. **Carpenter, F, M.**—The lower permian insects of Kansas. VII. [Proc. Am. Ac. A & S] 70: 103-146. ill. (*). **Daviault, L.**—Contribution a l'etude des insectes du Bouleau (Canada). [98] 62: 201-214, ill., cont. **Eggleton, F. E.**—A comparative study of the Benthic fauna of four northern Michigan lakes. [Pap. Michigan Acad. Sci. Arts & Letters] 20: 609-644, ill. **Eidmann, H.**—Zur kenntnis der insektenfauna von Südlabrador. [110] 2: 81-105. **Friedman, R.**—Thomas Moffet. The tercentenary of his contribution to scabies. [Med. Life, N. Y.] 1934: 620-633, ill. **Gallardo, A.**—La obra entomologica del Doctor Angel Gallardo. By C. Bruch. [104] 6: 235-242, ill. **Grueneberg, H.**—The causes of asymmetries in animals. [90] 69: 323-343. **Heikertinger, F.**—Wie liest man eine korrektur? [79] 21: 113-122. **Lameere, A.**—Precis de Zoologie, Tome IV: les Myriapodes, les Insectes. [Recu. Ins. Zool. Torley-

Rousseau] 5, Suppl. 1-260, ill. **Lloyd, L.**—The bacteria beds of sewage works as an environment for insects. [Pro. R. Ent. Soc. London] 10: 34-39, ill. **Melzer, J.**—Obituary by E. G. Linsley. [55] 11: 81. **Myers, J. G.**—Nesting associations of birds with social insects. [36] 83: 11-22, ill. **Rippon, C.**—Photographing insects in proportionate size. [Pro. R. Ent. Soc. London] 10: 28. **Roepke, W.**—Die Leica-photographie im dienste des entomologen. [17] 52: 137-141, ill. **Tremoleras, J.**—Obituary. [104] 6: 284-286, ill. **Welch & Eggleton.**—Additional data on submerged depression individuality in Douglas Lake, Michigan [Pap. Michigan Acad. Sci. Arts & Let.] 20: 737-750.

ANATOMY, PHYSIOLOGY, ETC.—Akkerman, K.—Researches on the behavior of some pathogenic organisms in the intestinal canal of Periplaneta americana. [Acta Leidensia] 8: 80-120. **Barendrecht, G.**—Die corpora pedunculata bei den gattungen Bombus und Psithyrus. [Acta Zool., Stockholm] 12: 153-204, ill. **Brittain, W. H.**—Studies in bee activity during apple bloom. [12] 28: 553-559, ill. **Chickering & Hood.**—Notes on the spermatogenesis of spiders. [Pap. Michigan Acad. Sci. Arts & Letters] 20: 589-595, ill. **Dustan, G. G.**—The influence of unfavourable feeding conditions on the survival and fecundity of oriental fruit moths. [4] 67: 89-90. **Frohawk, F. W.**—Feeding butterflies in captivity. [9] 68: 164. **Godgluck, U.**—Die kalaleptischen erscheinungen bei den hemipteren. [94] 146: 678-721, ill. **Jackson, D. J.**—Giant cells in insects parasitised by hymenopterous larvae. [31] 135: 1040-1041. **James, Hager & Carman.**—Preliminary studies on starvation and drowning of the chinch bug, Blissus leucopterus. [12] 28: 638-646, ill. **Laing, J.**—On the ptilinum of the blow-fly (Calliphora erythrocephala). [53] 77: 497-521, ill. **Latter & Eltringham.**—The epigamic behavior of Euplaea core asela (Lep: Danainae) with a description of the structure of the scent organs. The telegamic flight of the male. [Proc. R. Soc. Lond.] B 117: 470-482, ill. **Machura, L.**—Oekologische studien im Salzlackengebiet des Neusiedlersees, mit besonderer berucksichtung der halophilen Coleopteren-und Rhynchotenarten. [94] 146: 555-590, ill. **Marshall, W. S.**—The sense organs upon the dorsal surface of the female black scale, Saissetia oleae (Coccidae). [7] 28: 217-228, ill. **Metcalfe, M. E.**—The germ-cell cycle in Phytophaga destructor. [53] 77: 586-604, ill. **Needham, J. G.**—Some basic principles of insest wing venation. [6] 43: 113-129. **Roonwal, M. L.**—On the post-embryonic development of the respiratory system of Dialeurodes dissimilis. [53] 77:

605-622, ill. **Rueschkamp, P. F.**—Der flugapparat der Kaefer. [Zoologica, Stuttgart] 28, hft. 75: 88 pp., ill. **Snodgrass, R. E.**—The history of an insect's stomach. [Rept. Smiths. Inst.] 1934: 363-387, ill. **Tauber & Yeager.**—On total hemolymph (blood) cell counts of insects. [7] 28: 229-240. **Tulloch, G. S.**—Morphological studies of the thorax of the ant. [70] 15: 93-130, ill. **van der Horst, C. J.**—The optics of the insect eye. [Acta Zool., Stockholm] 14: 101-109. **Van Thiel, P. H.**—Investigations on the range and differentiation of Anopheles maculipennis races—in Italy. [Acta Leidensia] 9: 232-273; 289-293, ill. Zuechtungsversuche in zusammenhang met dem rassenproblem bei Anopheles maculipennis. [Acta Leidensia] 8: 242-266. **Weber, H.**—Skelett, muskulatur u. darm der schwarzen blattlaus. [Zoologica] 28, hft. 76: 120 pp., ill. **Wolf, H.**—Das larvale und imaginale tracheensystem der odonaten und seine metamorphose. [94] 146: 591-620, ill. **Woodrow, A. W.**—Some effects of relative humidity on the length of life and food consumption of honeybees. [12] 28: 565-568, ill. **Yeager, Hager & Straley.**—Some physiological effects of certain aliphatic thiocyanates on the isolated heart preparation from the roach, Blatta orientalis. [7] 28: 256-264.

ARACHNIDA AND MYRIOPODA.—Bishop & Crosby.—Studies in American spiders: miscellaneous genera of Erigoneae. [6] 43: 217-241, ill. (*). **Bishopp, F. C.**—Ticks and the role they play in the transmission of diseases. [Rept. Smiths. Inst.] 1934: 389-406, ill. **Chamberlin & Ivie.**—Nearctic spiders of the family Urocteidae. [7] 28: 265-279, ill. (*). **Chickering, A. M.**—Further additions to the list of Araneae from Michigan. [Pap. Mich. Ac. Sci.] 20: 583-587. **Gertsch, W. J.**—New American spiders with notes on other sps. [40] 805: 24 pp. **Gilliatt, F. C.**—The European red mite, Paratetranychus pilosus in Nova Scotia. [Can. Jour. Res.] 13, D: 1-17, ill. **Herms, Bailey & McIvor.**—The black widow spider. [Univ. Cal. Ag. Exp. Sta.] Bul. 591: 30 pp., ill. **Herrick, C. A.**—The tick, Ornithodoros talaje in Wisconsin homes. [Jour. Parasitology] 21: 216-217. **Mello-Leitao.**—Novo escorpiao Brasileiro do gen. Urophonius. Especies Brasileiras do gen. Loxosceles. A proposito de um novo vejovida do Brasil. [15] 6: 13-15; 69-73, ill; 75-82, ill. **Mello-Leitao et Arle.**—De l'importance des exuvies dans l'etude de la biologie et de la systematiques des araignees. [15] 6: 125-127, ill.

THE SMALLER ORDERS OF INSECTS.—Hood, J. D.—Some new or little-known Thysanoptera of the family Phlaeothripidae. [105] 5: 159-199, ill. **Hood, J. D.**—

Eleven new Thripidae (Thysanoptera) from Panama. [6] 43: 143-168, ill. **Hood, J. D.**—Five new Thysanoptera of the genus Aeolothrips (Aeolothripidae). [1] 61: 103-110, ill. **Ide, F. P.**—Life history notes on Ephoron, Potamanthus, Leptophlebia and Blasturus with descriptions. [4] 67: 113-125, ill. (*). **McDunnough, J.**—Notes on western species of Ephemeroptera. [4] 67: 95-104, ill. (*). **Navas, R. P. L.**—Decadas de insectos nuevos. [Broteria] 31: 97-107, ill. (S). **Nitzsch, G. H.**—Contribucion al conocimiento de los piojos de los animales de Mexico. [An. Inst. Biol. Mex.] 6: 119-128, ill. **Thompson, G. B.**—New gen. of Mallophaga. I. [116] 27: 281-287, ill. **Werneck, F. L.**—Microthoracius minor e demais especies do mesmo genero (Anoplura, Haematopinidae). [105] 5: 107-116, ill.

ORTHOPTERA.—Crampton, G. C.—A defense of the view that the Grylloblattids are descended from the Protorthoptera and lead to the tettigonioid family Stenopelmatidae—a reply to Dr. E. M. Walker. [6] 43: 97-111. **Hebard, M.**—Studies in the Orthoptera of Arizona. Part 1. New genera, species and geographical races. [1] 61: 111-153, ill. **Lahille, et al.**—Lucha Nacional contra la Langosta. [Minist. Agric. Nacion, Buenos Aires] 1934: 11-134, ill. **Ochs, G.**—Die brasilianische artengruppe der gattung Gyrinus, untergattung Neogyrinus (Gyrinidae). [105] 5: 124-132. **Uvarov, B. P.**—A new name for the genus Gryllus auct., nec L. [75] 16: 320.

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Blissus leucopterus in the Catskills. [19] 30: 62. **Usinger, R. L.**—A second American sp. of the naucorid subf. Laccocorinae. [105] 5: 133-136, ill.

LEPIDOPTERA.—Benjamin, F. H.—An anomalous new species of moth from California. (Phalaenidae, Apatelinae). [55] 11: 55-56. (*). **Cockerell, T. D. A.**—Migration of Pyrameis cardui. [19] 30: 124. **Eckerlein, H.**—Automeris umbracticus sp. nov. aus Franzosisch Guayana. [14] 49: 53-54, ill. **Gehlen, B.**—Eine neue amerikanische Sphingide. [14] 49: 36-37, ill. **Glauert, L.**—Birds and butterflies. [31] 135: 959. **Hayward, K. J.**—Lepidopteros Argentinos Familia Hesperidae. [104] 6: 97-233, ill. (*). **Heikertinger, F.**—Die gattungsnamen der holarktischen tagfalter. [17] 52: 178-183, 197-202. **Hower, T. W.**—A new California butterfly. [55] 11: 82. **Hudson, G. V.**—A suggested explanation of variation in cryptic lepidoptera. [8] 71: 156-158. **Klots, A. B.**—On the life history of Pieris virginiensis. [6] 43: 139-142, ill. **Lange, W. H.**—The terminology of the male genitalia of the Noctuidae. [55] 11: 57-61. A new locality record for California. (Zelleria haimbachi.) [55] 11: 82. **Leussler & Bryant.**—Notes on the diurnal Lepidoptera of the Canadian Arctic collected by Owen Bryant in the summers of 1929 to 1932. [19] 30: 115-118. **McDunnough, J.**—An apparently new Pherne from California (Geomet.). [4] 67: 110-111. **McDunnough, J.**—A new noctuid from southern California (Cuculliinae). [4] 67: 135-136. **Milum & Geuther.**—Observations on the biology of the greater wax moth, Galleria mellonella. [12] 28: 576-578. **Norris, M. J.**—A feeding experiment on the adults of Pieris rapae. [9] 68: 125-127. **Putman, W. L.**—Notes on the hosts and parasites of some lepidopterous larvae. [4] 67: 105-109. **Schwanwitsch & Sokolov.**—On the wing-pattern of the genus Lethe (Satyridae). [Acta Zool., Stockholm] 15: 153-181, ill. **Strecker, J. K.**—Moths from the vicinity of Waco, Texas. [Baylor Univ. Bull.] 38, No. 3: 46-47. **Woodhouse, L. G. O.**—Notes on a special method of making butterfly pictures. [Pro. R. Ent. Soc. London] 10: 5-9.

DIPTERA.—Borgmeier, T.—Um n. gen. de Phorideos de Costa Rica (Phoridae). [105] 5: 136-138, ill. **Bromley, S. W.**—Two new South American Asilidae. [110] 2: 109-111, ill. **da Costa Lima, A.**—Notas sobre trypetidas brasileiras. [105] 5: 199-202, ill. (*). **Curran, C. H.**—New American Asilidae. [40] 806: 12 pp. **Dampf, A.**—The occurrence of Anopheles maculipennis in Mexico. [68] 82: 171-172. **Enderlein, G.**—Dipterologica, II. Aussereuropäische Simu-

liiden aus dem Wiener Mus. [Sitz. Ges. Naturf Freunde Berlin] 1934: 181-190; 190-195. (S*). **Hull, F. M.**—Some undescribed sps. of Eristalis from N. Am. in the U. S. N. M. [91] 25: 326-331, ill. (S). **James, M. T.**—The nearctic species of Adoxomyia (Stratiomyidae). [55] 11: 62-64. (*). **Komp & Brown.**—Culex jubifer, a n. sp. of Culex from Panama (Culicidae). [7] 28: 254-255, ill. **Malloch, J. R.**—Diptera of Patagonia and South Chile. Part VI. Fasc. 5. Acalyptrata (concl.). 393-489, ill. (*). **Painter, R. H.**—The biology of some dipterous gall-makers from Texas. [103] 8: 81-97, ill. **Philip, C. B.**—Comments on Marten's species of Tabanidae (Horseflies) from western United States. [4] 67: 92-95. **Rees, D. M.**—Observations on a mosquito flight in Salt Lake City. [Bul. Univ. Utah] 25: 6 pp. **Ries, D. T.**—Biological study of the walnut husk fly (Rhagoletis suavis) [Pap. Mich. Ac. Sci.] 20: 717-724, ill. **Rozeboom, L. E.**—Culex rooti, a new Culex from Panama (Culicidae). [7] 28: 251-253, ill. **Russell & Baisas.**—The technic of handling mosquitoes. [Philippine Jour. Sci.] 56: 257-294, ill. **Sabrosky, C. W.**—The vittate species of the genus Madiza (Chloropidae). [103] 8: 105-116, ill. (*). **Sack, P.**—Chloropisca und Thaumatomyia. [17] 52: 195-197. **Sadler, W. O.**—Biology of the midge Chironomus tetans and methods for its propagation. [Cornell U. Memoir] 173: 24 pp., ill. **Townsend, C. H. T.**—New South American Oestroidea. [105] 5: 216-233. **Zach, O.**—Die bienenlaus. [Mikrokosmos] 28: 169-171, ill.

COLEOPTERA.—Balch, R. E.—Notes on the habits of attack of the hemlock borer. [4] 67: 90-92. **Bierig, A.**—Ein neuer Quedius aus Panama. [Bull. Ent. Sec. Nat. Mus. Prague] 1934: 173-174, ill. **Blaisdell, F. E.**—New sps. of Eleodes from Mexico in the British Museum (Tenebrionidae). [107] 4: 156-160. **Blake, D. H.**—Notes on Systena. [19] 30: 89-108, ill. (*S). **Brown, W. J.**—American species of Ludius; the aeripennis group. [4] 67: 125-135, ill. (*). **Buchanan, L. L.**—Notes on the generic synonomy of Collabismodes cubae (Curculionidae). [19] 30: 125-126. **Chapire, E. A.**—New Cuban Pleurostict Scarabaeidae. [115] 9: 67-75. **Dallas, E. D.**—Nota adicional sobre "Anomalia en Lytta centenaria." [104] 6: 283. **Denier, C. L.**—Cinco especies nuevas de Meloidos Sudamericanos. [104] 6: 268-275, ill. **Fiedler, C.**—Ueber einige mit Coelosternus verwandte gattungen mit neubeschreibungen. [110] 2: 122-143. (*S). **Franz, E.**—Neues zur gattung Gymnocerus. [17] 52: 169-172, ill. **Günther, K.**—Neue Curculioniden, gesammelt von F. Nevermann in Costa Rica, mit ökologischen daten.

[18] 29: 209-212, ill., cont. **Hinton, H. E.**—New sps. of North American Helichus (Dryopidae). [55] 11: 67-71, ill. **Hinton, H. E.**—New gen. and sps. of neotropical Colydiidae, with notes on others. [105] 5: 202-215, ill. **Hopping, R.**—Revision of the genus Mycterus (Pythidae). [55] 11: 75-78. (*). **Horn, W.**—On some Cicindelidae from the Pacific coast of Mexico, the West Indies and United States. [55] 11: 65-66. (*). **Hustache, A.**—Nouveaux Hoplorrhinus (Curcul.). [104] 6: 277-282. **Kolbe, H.**—Biogeographische bemerkungen zu K. Mandl's abhandlung über Cicindela lunulata und ihre rassen auf grund meiner theorie der morphologischprogressiven tierverbreitung. [110] 2: 114-121. **Lesne, P.**—Troisieme note sur les Philorea (Tenebrionidae). [25] 40: 131-132. (S*). **Lindahl, J. C.**—Acmaeodera hepburni var. latiflava. [55] 11:61. **Linsley, E. G.**—Cerambycidae from the Revillagigedo Islands, Mexico. [55] 11: 72-74, ill. (*). Dectes spinosus. [55] 11: 74. Notes and descriptions of new or little known neotropical Sphaerionini (Cerambycidae). [105] 5: 139-149. **Löding, H. P.**—Geotrupes ulkei. [19] 30: 108. **Lutshnik, V.**—Descripcion de una especie nueva del genero Barysomus (Carab.). [104] 6: 267. **Lutshnik, F.**—De n. sp. generis Tichonia (Carabidae). [105] 5: 215. **Obenberger, J.**—Monographie du genre Taphrocerus (Bupr.). [Bull. Ent. Sect. Nat. Mus. Prague] 1934: 5-62. (S*). **Rau, G. J.**—A new variety of Anoplodera vittata from New York (Cerambycidae). [19] 30: 63-64. **Saylor, L. W.**—A Mexican species new to the United States. (Scarabaeidae). [55] 11: 66. A new Aphodius of the Cadaverinus group. (Scarabaeidae.) [55] 11: 80. **Schade, F.**—Grosse käfer. [17] 52: 193-195. **Sloop, K. D.**—Distributional notes on some California Elateridae. [55] 11: 64. **Uhmann, E.**—Neue Hispinen aus Costa-Rica. [2] 31: 103-106. **Voss, E.**—Einige unbeschriebene neotropische Curculioniden nebst einer vorstudie zur tribus Promecopini. [Bull. Ent. Sect. Nat. Mus. Prague] 1934: 12: 63-104.

HYMENOPTERA.—Bequaert, J.—Additions and corrections to the Revision of North American Vespinae. [19] 30: 119-124. **Blair, B. H.**—The bees of the group Dieunomia. [6] 43: 201-214, ill. (*). **Bruch, C.**—Breves observaciones sobre costumbres de Eciton (Holopone) dulcius var. jujuyensis y descripcion del Macho (Formic.). [104] 6: 261-265, ill. **Dowden, P. B.**—Brachymeria intermedia, a primary parasite, and B. compsilurae a secondary parasite of the gipsy moth. [47] 50: 495-524, ill. **Flanders, S. E.**—Two described species of Trichogramma validated. [55] 11: 79. **Graenicher, S.**—Bee-fauna and vegetation of Wis-

consin. [7] 28: 285-310. **Grandi, G.**—Nuovi Agaonidi (Chalcidoidea) della fauna neotropica. [Boll. Lab. Ent. Ist. Sup. Agrar. Bologna] 7: 186-197, ill. **Muesebeck, C. F. W.**—Three new reared parasitic hymenoptera, with some notes on synonymy. [91] 25: 279-283. **Muesebeck, C. F. W.**—On the genus Oncophanes, with descriptions of two new related genera (Braconidae) [7] 28: 241-250. **Ogloblin, A. A.**—Dos especies nuevas del genero Paranaphoidea (Mymaridae). [105] 5: 149-153, ill. **Ogloblin, A. A.**—Especies nuevas del genero Eurythmelus enock de la Republica Argentina (Mymaridae) [104] 6: 243-260, ill. **Rau, P.**—Notes on the biology of certain eumenid wasps. [19] 30: 110-112, ill. **Richards, O. W.**—Two new parasites of aculeate Hymenoptera from Trinidad. [107] 4: 131-133, ill. **Roberts, R. A.**—Some N. Am. parasites of blowflies. [47] 50: 479-494, ill. **Smith, M. R.**—Two new species of North American Strumigenys (Formicidae). [7] 28: 214-216. **Walley, G. S.**—The genus Cidaphus in Canada (Ichneumonidae). [4] 67: 111-112. (*).

SPECIAL NOTICES.—Ouchi, Y.—Bibliographical introduction to the study of Chinese insects. Ent. Rept. No. 1, Jour. Shanghai Sci. Inst. Sect. 3, Vol. 2, 533 pp. This should be a useful work to students of Chinese insects. **Popenoe Club News Letter.**—This active entomological club at Kansas State College, Manhattan, issues another news letter containing much of interest for active entomologists.

INSECTS OF SAMOA, AND OTHER SAMOAN TERRESTRIAL ARTHROPODA, Part IX, SUMMARY. By P. A. BUXTON. British Museum. June 1935.—During the last nine years, the British Museum has been publishing a series of papers on Samoan insects, written by various entomologists. Professor Buxton now sums up the general results in a work of 72 pages, which does not include his "Description of the Environment," published in 1930. No less than 80 new genera and 669 new species have been described in the work, not including some from other islands, introduced for purposes of comparison, or the one new genus and 15 new species of arthropods other than insects. The apparently endemic species constitute 49 per cent of the fauna. The Plecoptera, Embioptera and Mecoptera appear to be totally lacking; the first and last of these are also apparently absent from the Hawaiian fauna. No sawflies or Chrysididae were found. The non-parasitic Hymenoptera are said to show only 26 per cent of endemics, but the percentage is actually somewhat greater, three species having been omitted. There is hardly any affinity with the Hawaiian fauna; the

Samoan insects are essentially of Indo-Malayan type, but it is considered that the islands are oceanic, and have never been connected with any continent. In contrast with the condition in the Hawaiian islands, the species do not show much differentiation on the different islands, but so far as this has occurred, there is usually one race or species in Upolu and Savaii, and a representative one in Tutuila.

Dr. P. Marshall (1912) concluded that bathymetrical, structural and petrographical characteristics supported the idea that the ancient boundary of the southwest Pacific passed through New Zealand, Tonga, Fiji and the New Hebrides, thence on to the Solomons and beyond. This would leave Samoa as oceanic, although the islands are the eastern end of a relatively shallow area extending nearly to the northern end of the New Hebrides.

It seems significant that the ground-nesting Halictine bees are absent from the Hawaiian Islands, but have endemic species in New Zealand (3), New Caledonia (3), Solomon Islands (3), New Hebrides (2), Guam (1), Tonga Islands (1), Fiji Islands (3) and Samoan Islands (11, of which two are considered subspecies of an endemic species). Also, the Samoan Halictines have produced an endemic genus, with three species. If these insects arrived by a land route, it is not necessary to suppose that it was continuous from a continental area at any one time. It is noted that the regular trade wind in Samoa is south-easterly, and the surface drift of the ocean is from the same quarter. Hence it would appear that the Halictine bees had little chance to arrive by other than a land route. But Buxton quotes A. Thomson (1925) to the effect that the trade winds do not extend more than a few miles up, and above them are the anti-trades, in the opposite direction, and generally with a greater velocity. There are also the hurricanes. The recent surprising discoveries of small insects caught by aviators high up in the air, up to 14,000 ft., clearly indicate a means of transportation not hitherto sufficiently appreciated, and make it possible or even probable that the Halictines, at very rare intervals, reached Samoa through the air. Buxton gives a table showing the distribution of the subgenera of mosquitoes in the Pacific islands, the number regularly decreasing eastward. Thus the Fiji Islands have eight subgenera, but Samoa and Tonga only four (the same four) each.

There is much else in this interesting report which deserves comment, and it may well be said that the subject has by no means been exhausted, but rather has been presented in such a way as to arouse the enthusiasm of any broad-minded entomologist and make him long to go to Samoa and continue the investigations. T. D. A. COCKERELL.

COLONY-FOUNDING AMONG ANTS with an account of some primitive Australian species. By WILLIAM MORTON WHEELER. Cambridge, Massachusetts. Harvard University Press, 1933. 12 mo., pp. x, 179. 29 figs.—The contents of this book are largely based on the author's observations in Australia in 1914 and 1931. Colony-founding among ants has, during the last thirty years, been found to be much more diverse than the early writers had suspected. "It is customary to distinguish an independent and a dependent type . . . according as the young queen establishes her colony and brings up her first brood of workers entirely by herself, or behaves as a parasite and is therefore compelled to resort to the workers of an alien colony and species capable of acting as a host for aid in accomplishing her task. . . . In a third type, that of swarming, or 'hesmiosis,' as it may be called, a portion of the worker population emigrates with one or more fertile females to form a new colony." Seven variations in the independent type are summarized on pages 10-14. Special attention is devoted to nest-founding in the Australian bull dog ants (*Myrmecia*) and other genera of the subfamily Ponerinae, accompanied by technical descriptions of a number of the species (pp. 16-101). The remainder of the volume is devoted to general considerations. "Morphologically *Myrmecia* and *Amblyopone* are so primitive that they have always been assigned to the lowest taxonomic rank among existing Formicidae. It is reasonable therefore to regard their colony-founding behavior as equally primitive or archaic," and this is that form of the independent type in which the fertilized females are capable of foraging for themselves and for their first brood. This method strikingly resembles that of the colony-founding Vespine wasps. The variations in this behavior in different groups of Hymenoptera are discussed and followed into the ramifications of parthenogenesis, matriarchy, brood-egotism (intolerant behavior of social female Aculeates toward other females of the same species) and origin and social behavior of the worker caste. A synopsis of formicid methods of founding colonies is presented on pp. 154-157, a bibliography on pp. 161-170 and an index on pp. 173-179.—P. P. CALVERT.

INSECTS AS MATERIAL FOR STUDY. Two Inaugural Lectures delivered on 17 & 24 November, 1933, by G. D. HALE CARPENTER, D. M., Hope Professor of Zoology (Entomology). Oxford at the Clarendon Press. 1934. 38 pp. 1 plate (frontispiece). $1.00.—The first lecture reviews various relations of insects to other insects and to animals in general, especially in the production of diseased conditions and in parasitism, and

as exemplified in courtship, such as that of Empid flies, some of which, with their silken balloons offered by males to females, are figured in the frontispiece. Finally relations between flowers and insects are briefly touched on. The second lecture (pp. 20-38) is one of the latest expositions of the theory of mimicry. It concludes as follows: "The study of the coloration of Insects, and especially the phenomena of Mimicry, has provided, under the leadership of my distinguished predecessor, to whom I owe so much, what is widely recognized to be some of the strongest evidence that there is in support of Natural Selection. It is strange to reflect that the first Hope Professor [J. O. Westwood] solemnly warned the young man who was eventually to be the second Professor [E. B. Poulton] against the dangers of Darwinism, and that that young man made the subject his life's work and became the leading exponent in this country of the Darwin-Wallace contribution to the study of Evolution! The vast mass of material which has been added to Hope and Westwood's collections during the forty years in which Professor Poulton controlled the department is by no means worked out yet, and fresh acquisitions are constantly being given, and sought. It will be my endeavor that the reputation which the University now possesses as a centre for the study of adaptation and thus of Evolution, among Insects, shall not be diminished, and that research into this and other aspects of Insect life shall be continued, to the increase of scientific knowledge, as a result of the benefactions of the founders of the Hope Professorship of Zoology."—P. P. CALVERT.

ENTOMA. A Directory of Insect Pest Control. Edited by C. C. HAMILTON. 1935. Published by the Eastern Branch of the American Association of Economic Entomologists. 8vo, 2-102 pp. 50 cents.—"This directory has been prepared to assist entomologists and others interested in insect control in obtaining certain kinds of information which have heretofore been somewhat difficult of access." The first 34 pages contain advertisements of all those articles enumerated in the following lines; they are indexed on page 102. Pages 36-67 list alphabetically insecticides and materials used in insecticides with names and addresses of those who will furnish each substance. Similar lists are those of entomological supplies and equipments (pp. 68-71), insecticide machinery and supplies (pp. 71-74), pest-exterminating companies (pp. 74-78) and commercial companies caring for trees (pp. 78-80). There are briefer lists of publishers of entomological books (*not* entomological journals), biological testing laboratories, consulting entomologists and of an insectary which furnishes parasitic insects for

biological control (pp. 80-81). The remainder of this pamphlet comprises "Information on Insecticides, . . . not a learned dissertation for the professional entomologist, but . . . pointing out briefly some of the fundamental facts." Suggestions for the improvement of Entoma are requested by its editor at the Dept. of Entomology, Rutgers University, New Brunswick, New Jersey, from whom doubtless copies can be obtained.—P. P. CALVERT.

PRINCIPLES OF INSECT MORPHOLOGY by R. E. SNODGRASS, U. S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine. McGraw-Hill Book Co., Inc. New York and London, 1935. Pp. ix, 667, 319 text-figs. $6.00.—In the years 1927-1933, Mr. Snodgrass published five major articles on insect morphology in the Smithsonian Miscellaneous Collections, volumes 80, 81, 82, 85 and 89. These total 649 pages and contain 249 text-figures, without making any deduction for duplication. Three of these articles have been noticed in the NEWS (xxxviii: 256, xli: 343, 344). On taking up the new volume on "Principles," one acquainted with its five predecessors is naturally interested to learn how far its text reproduces theirs. He soon finds that they are very different for the most part; that even when similar, as for example in discussing the antennal muscles (Principles, page 132, Smiths. Misc. Coll. 81, p. 58), the later text is not identical with the earlier. So also with the numerous text-figures—and figure *x* often includes several distinct drawings—many, but not all, of those in the Smithsonian papers are reprinted in the *Principles* and the latter introduces many new ones. The upshot of the matter is that neither the series of 1927-33 nor the new book contains all that is in the other, both must still be consulted by the morphologist. Though the author does not say so, it is likely that a remark made in the introduction to his Morphology and Evolution of the Insect Head of 1928 applies to the Principles also: "The reader, therefore, should not take it amiss if he finds certain conclusions drawn in this [book] that do not fit with former statements by the writer."

The Introduction of the Principles is concerned with the distinctive structural features of the Annelids, the Onychophora and the major groups of the Arthropods. These last are the Trilobita, the Chelicerata and the Mandibulata. The Mandibulata comprise the Crustacea, Myriapoda and Hexapoda. The second chapter (34 pages) sketches the embryonic development of insects; the third to the twelfth deal with external morphology and feeding mechanisms, the thirteenth to the nineteenth with the organ systems. The list of references, pp. 625-646, "is by no means a bibliography of the subjects included in

the text. It contains the works cited and a few others of general importance." The titles in other languages much exceed those in English. A special feature of the book is the glossaries of relevant terms at the end of many of the chapters, often with foreign equivalents of the English terms. The index occupies more than twenty pages of small type.

It is out of the question, in this review, to mention even a few of the morphological conclusions here presented. Probably each reader will find one or more which demolish some generalization he has picked up, he knows not where, as for example: "We cannot, therefore, attribute the characteristic structure of the pterygote pleuron to the development of the wings," because "the basic features of the pterygote pleuron are the same in the wingless prothorax as in the alate mesothorax and metathorax" (p. 166). The emphasis on the musculature as a clue to morphology of the skeleton, so evident in the Smithsonian papers, is here also. The two trochanters of the parasitic Hymenoptera are, one might say, classic, but consider the following: "In the Odonata, both nymphs and adults, there are two trochanteral segments, but they are not movable on each other; the second contains the reductor muscle of the femur. The usual single trochanteral segment of insects, therefore, probably represents the two trochanters of other arthropods fused into one apparent segment, since it is not likely that the primary coxotrochanteral hinge has been lost from the leg. In some of the Hymenoptera, a basal subdivision of the femur simulates a second trochanter, but the insertion of the reductor muscle on its base attests that it belongs to the femoral segment, since as shown in the Odonate leg, the reductor has its origin in the true second trochanter" (p. 197). (The same view was expressed in Snodgrass's paper of 1927, p. 79.)

We must register a regret that the legends of many of the text figures do not explain *all* of the reference letters or groups of letters, necessitating, in consequence, a study of the text to find their meaning. Sometimes the same muscles are designated by groups of letters (fig. 117), sometimes by numbers (fig. 116). Is not the term *alinotum* (pp. 174, 190) a case similar to one to which Mr. Snodgrass once applied the expression "a happy, though mismated union of linguistic elements," in spite of the precedent set by alisphenoid?

Of all the entomological text-books in English, produced on either side of the Atlantic, the one to which these *Principles* is most like in scope and treatment is Packard's *Textbook* of 1898 of 746 pages and 654 text-figures. The chief difference between them is the more extended treatment of embryology (nearly 200 pages) in the older book. After all the discussions of the intervening thirty-seven years, Snodgrass would seem

(figs. 54, 245) to incline to the view that the insect head is composed of a union of a prostomium and five somites, not essentially different from that held by Packard (p. 54). Packard's Textbook has been of immense value as a work of reference to entomologists and others and is still useful. Its successor, the new Snodgrass, is likewise destined to a similar long life.—P. P. CALVERT.

ANIMALIUM CAVERNARUM CATALOGUS. Under this title there is appearing a work of unquestionable value, compiled by Dr. BENNI WOLF and published by W. Junk. This catalogue of the faunae of the caves of the World is appearing in parts and of a typography similar to that of the well known Coleopterorum Catalogus and Lepidopterorum Catalogus by the same publisher. The whole work will be in three parts: I. Bibliography, II. Faunistic, III. Systematic. The Bibliography lists the authors alphabetically, and under each, their works chronologically. In the faunistic part the caves are listed under their respective localities; and under each cave, references to the literature, by authors, and a list of the species recorded from the same. The systematic part has the species listed systematically and under each, the references to the literature, by authors. As many insects are cave dwellers, this catalogue should be of considerable value to entomologists interested in these insects.

The price averages about 10 cents per page, which, of course, is rather high, but such a price would not be objected to were the matter more condensed. There is too much wasted space between subjects and in the wide margins. A different arrangement of the matter would overcome this fault without impeding the elucidation of the contents. Four parts, or fascicles, have been issued to March, 1935, totalling 500 pages. Subscription to this work may be secured through W. Junk, Scheveningscheweg 74, Den Haag, Holland.

E. T. CRESSON, JR.

A new species of Micropeza from Colorado (Diptera : Micropezidae).

By EZRA T. CRESSON, Jr.

Micropeza jamesi new species.

Related to *M. ambigua* Cresson, 1908, differing in the deep black, clearly marked mesonotal stripes; pectus and posterior surface of hind femora of the male with black pile and bristles which are straight, not curly; first posterior cell open. It is not to be confused with the smaller *M. texana* Cresson, which has the femora annulated, and has different claspers, and the first posterior cell closed.

♂ : Yellow, with black to brown as follows: upper occiput including ocellar tumor, a broad upper postorbital stripe including both vertical bristles; antennae, arista, upper part of foveae, anterior projection of frons, palpi; median stripe on mesonotum dilating anteriorly and extending posteriorly onto scutellum, rarely showing a median yellow line anteriorly; a lateral stripe abbreviated anteriorly, narrowing posteriorly, not attaining posterior margin; a poorly defined mesopleural, and sharply marked sternopleural stripes and lateral margins of scutellum; tergites except lateral margins and apices of second to fifth, two basal spots and sublateral margins of sixth, some spots on genitalia; apices of tibiae and all tarsi. Apices of femora and bases of tibiae more or less brown. Thorax and abdomen rather thickly pollinose, niveous on the dark mesonotal stripes.

Structurally similar to *M. turcana* Townsend, but head very elongate, twice as long as high, the postorbital length about one-half diameter of eye. Eyes distinctly horizontal. Pectus and hind coxae with black bristles and hair, not pale pile; hind femora pilose on posterior surface basally. Forceps similar to those of *turcana* but the terminal finger is bent about 90 degrees with the main axis; first posterior cell distinctly open.

♀ : Similar to *turcana* but tergites scarcely more yellowish than the proximal ones; ovipositor dark, more than one-half as long as abdomen; marginal setae of sternites short, sparse.

Length, 7 mm.

Type.— ♂ ; Roggen, Colorado, May 19, 1934. (M. T. James). [A.N.S.P., no. 6518]. Paratypes.—4 ♂, 3 ♀ ; data as of type. 1 ♀ ; same data but collected by T. D. A. Cockerell. Distribution of paratypes: 3 ♂, 2 ♀ in collection of the Colorado Agricultural College.

The occurrence of Gibbium psylloides Czemp. in Philadelphia (Coleoptera: Ptinidae)

Several specimens of this species were brought to me for identification by Mr. John T. Kavanaugh of the Vogel-Ritt, Inc., Scientific Exterminators, in Philadelphia. They were reported to be very numerous in the nail holes in the floor of a church in this city, especially along the edge of the carpet, and that they annoyed the people during the services. Smith, in his list of the insects of New Jersey, 1910 edition, mentions this species being found in the New York Produce Exchange and in store houses in New Jersey. Fall in his treatise on the Ptinidae* recorded the species from Georgia to California. Leng, in his Catalogue, gives the most northern records as Virginia. I do not know of any other records of this species occurring this far north.—E. T. Cresson, Jr.

* Trans. Am. Ent. Soc., XXXI p. 102, (1905).

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Exchange—Will collect insects of Connecticut this season and desire to get in touch with collectors desiring this material, either in exchange or for cash. Harry L. Johnson, So. Meriden, Conn.

Wanted— Names and addresses of those desiring Cocoons of Actias luna and Automeris io. Exchange considered. Eggs in season. Virginia Weaver, 822 S. College Ave., Tulsa, Okla.

Literature Wanted—Barnes & McDunnough's "Contributions," Henry Edward's "Pacific Coast Lepidoptera" and other publications relative to North American Lepidoptera. C. F. dos Passos, Mendham, New Jersey.

Geometers Wanted from all parts of United States, for cash or exchange. Edward Guedet, P. O. Box 305, Napa, California.

Wanted—Tabanidae (Horseflies and Deerflies). Exchange, purchase, or for determination. G. B. Fairchild, P. O. Box 272, Monticello, Fla.

Exchange.—Lepidoptera of the Western United States for rare American or tropical specimens. C. W. Herr, Woodburn, Ore. R-3.

Wanted—Insects in exchange for Japanese insects or to buy. Tell me your wishes. Hiromu Yamamoto, Matsuo-Kozan. Iwategun Iwateken, Japan.

Would like to exchange Southern California insects for any North American Mutillidae (wingless wasps or velvety ants). Curtis Brown, 2950 G St., San Diego, California.

Wanted.—To get in touch with Specialists who will make determinations for a share of our duplicates. We have many undetermined specimens from all parts of Iowa.—H. E. Jaques, Iowa Insect Survey, Mt. Pleasant, Iowa.

Wanted.—Communication with anyone who has or is collecting Lepidoptera in Burlington County, New Jersey Also anyone having a microscope for sale.—E. P. Darlington, New Lisbon, N. J.

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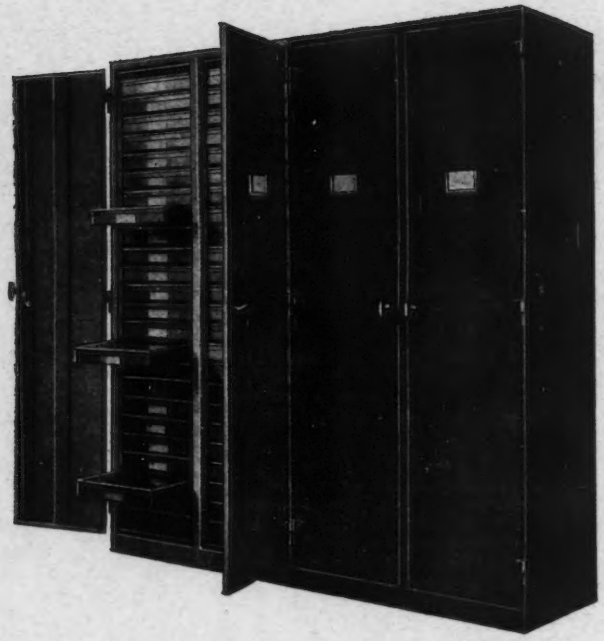

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